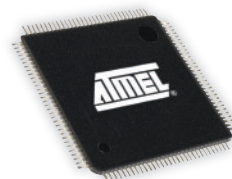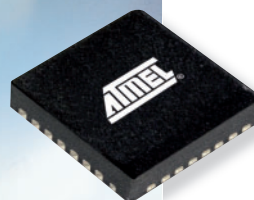# COMMUNICATIONS SOLUTIONS AUDIO

BROADCAST RADIO

- AM/FM
- DIGITAL RADIO
- MULTIMEDIA

ATMEL

ATMEL BOADCAST RADIO SOLUTIONS

Atmel has more than 30 years experience in designing broadcast radio solutions, such as AM/FM front-end devices or active antenna solutions. One focus area of Atmel's broadcast radio activities is the car audio segment. Both Atmel's in-depth radio know-how and its high quality standards (ISO 9001 and TS 16949) enable Atmel to meet the specific quality and performance requirements in this market.

Atmel provides entire car radio system solutions (baseband and front ends), and supports design-ins with a broad range of tools including software and dedicated reference designs.
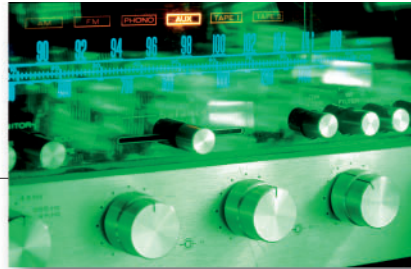

ELECTRONIC CAR ANTENNAS

Since the number of different antennas is drastically increasing with each new generation of electronics in cars, car manufacturers very often face the problem of finding enough room to place antennas. This requires them to find new, space-saving antenna solutions such as window antennas, windscreen antennas, and multiband/multistandard antennas. For broadcast radios, actively driven antennas will help to solve problems such as amplification losses and matching issues.
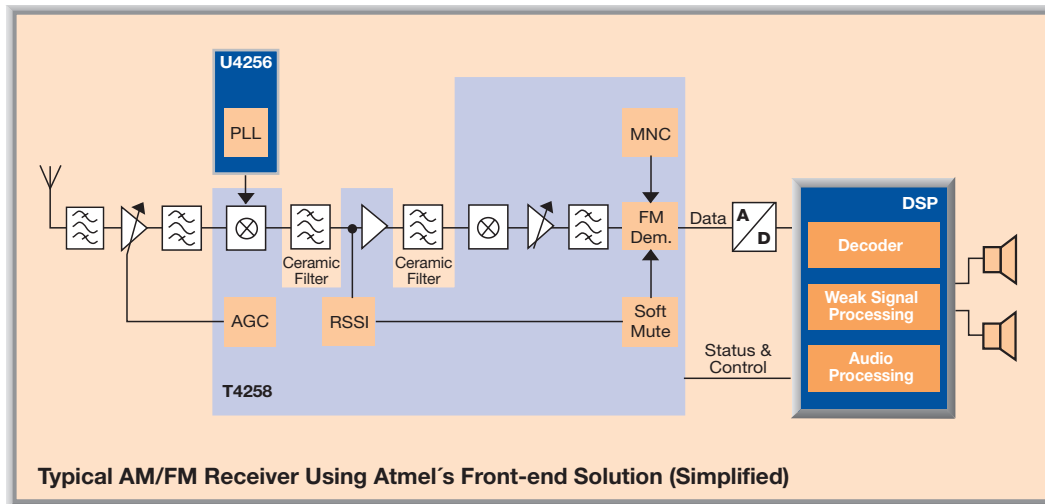
Atmel is well experienced in electronic car antenna amplifiers and is able to meet any technical antenna requirements.

A M / F M

Atmel offers highly integrated and high performance solutions for AM/FM car radio front ends that cover all frequency bands world-wide. All Atmel front-end solutions provide support for an optimized manufacturing process (ATA= automated tuner alignment).
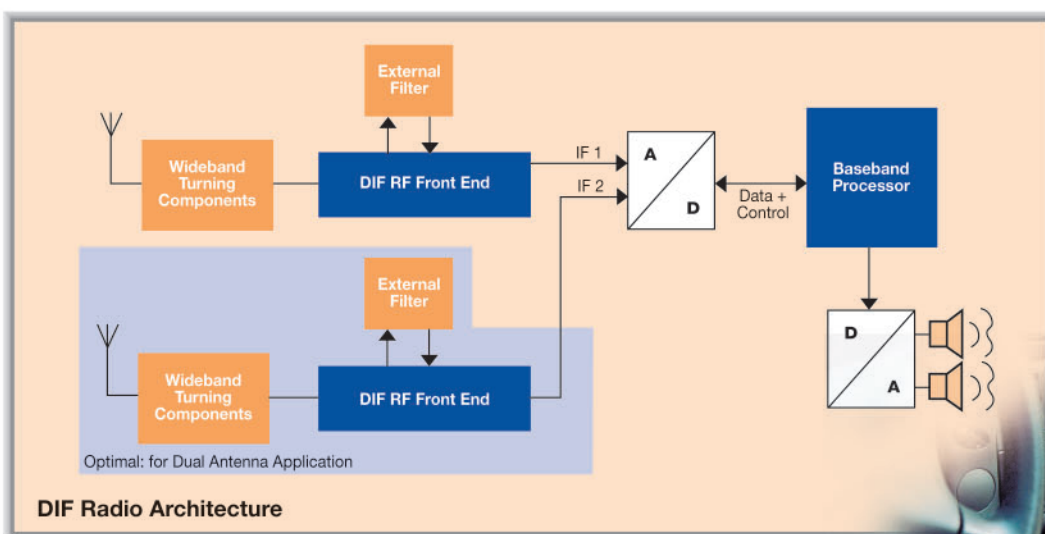
Along with the ICs' high integration level, this enables you to design cost-optimized solutions.

Typical AM/FM Receiver Using Atmel´s Front-end Solution (Simplified)

The so called DIF (digital IF) architecture is currently a basic architectural approach for car media applications. As AM/FM will be in existance for long time in parallel to upcoming digital modulations (such as DAB, HD Radio or DRM), the DIF approach is a good way towards multi-standard solutions. Atmel's new front-end ICs are multi-standard solutions since they can be used for both DIF-based solutions (supporting different baseband solutions), as well as for any other standard.
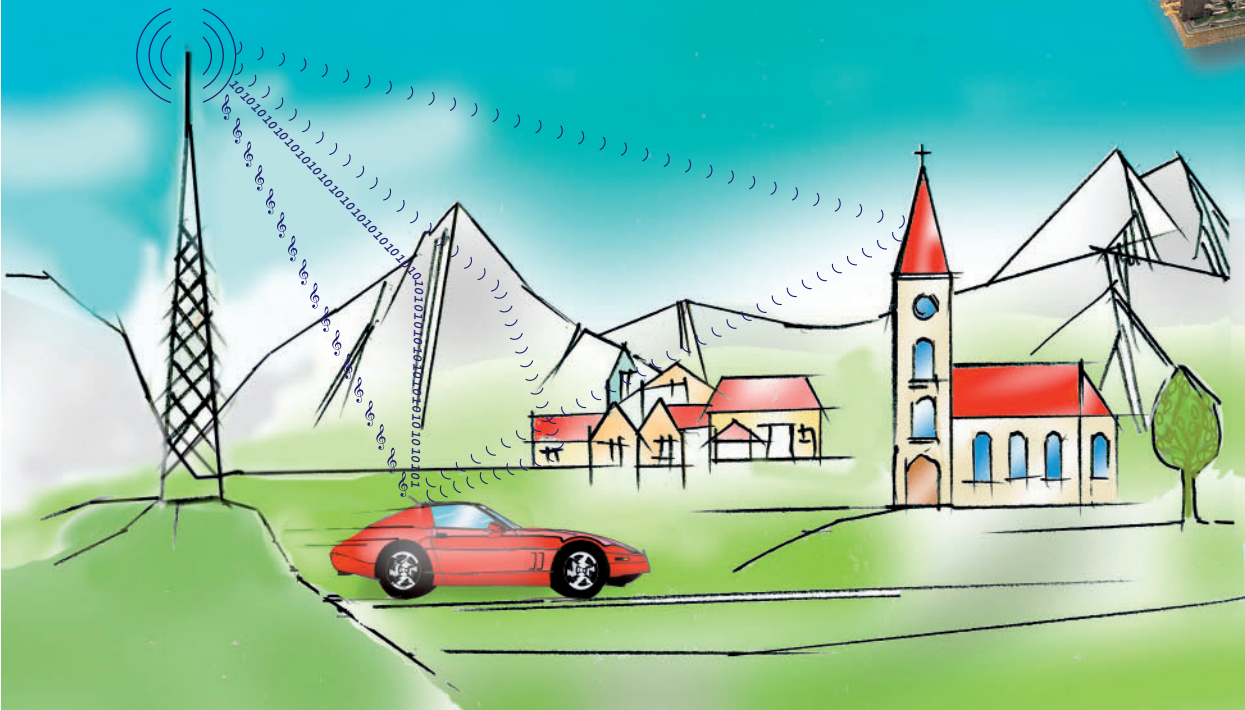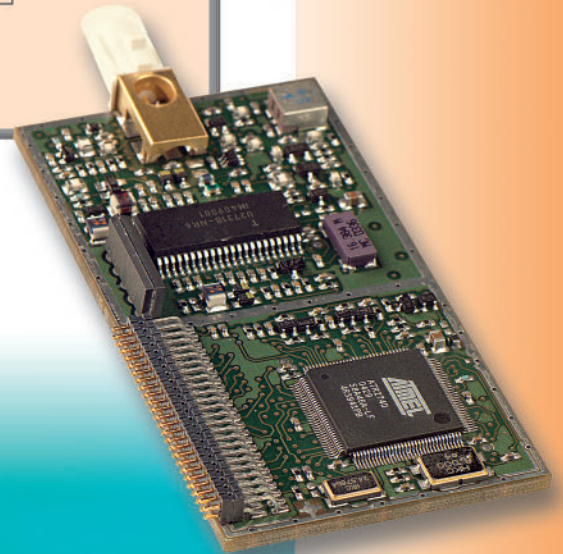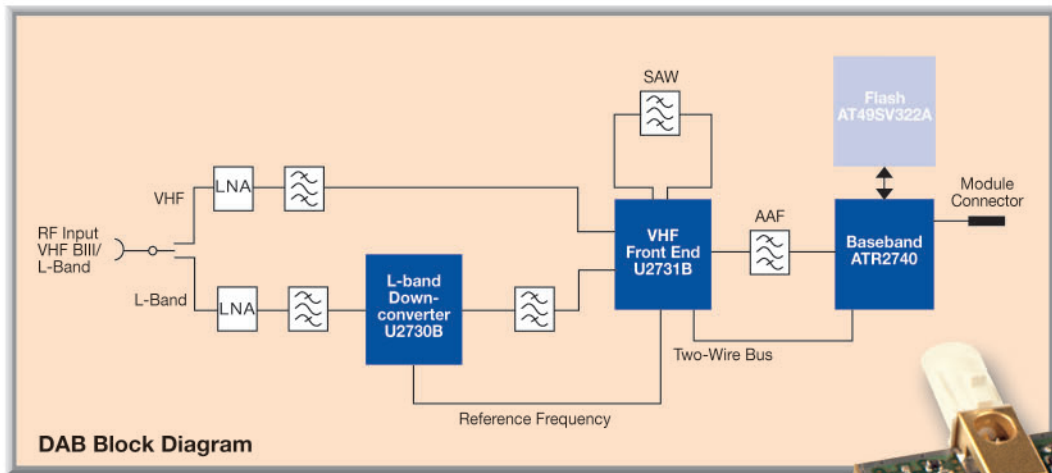
As for all other radio solutions, Atmel provides intensive design-in support, ranging from real design engineers to demo boards and evaluation kits as well as detailed documentation, to speed-up the time to market.

DIF Radio Architecture

Atmel provides a full DAB (Eureka 147) system solution including front end, baseband and software. This high-performance solution offers designers maximum flexibility and is able to address a wide range of different consumer, portable and car media applications. Thanks to the availability of standard processors and off-the-shelf tools from different third parties, design-in can be simplified.

Atmel's DAB system is a cost-optimized approach due to its highly integrated architecture, with power-saving capability both on the baseband and the front end for optimized dynamic power consumption.
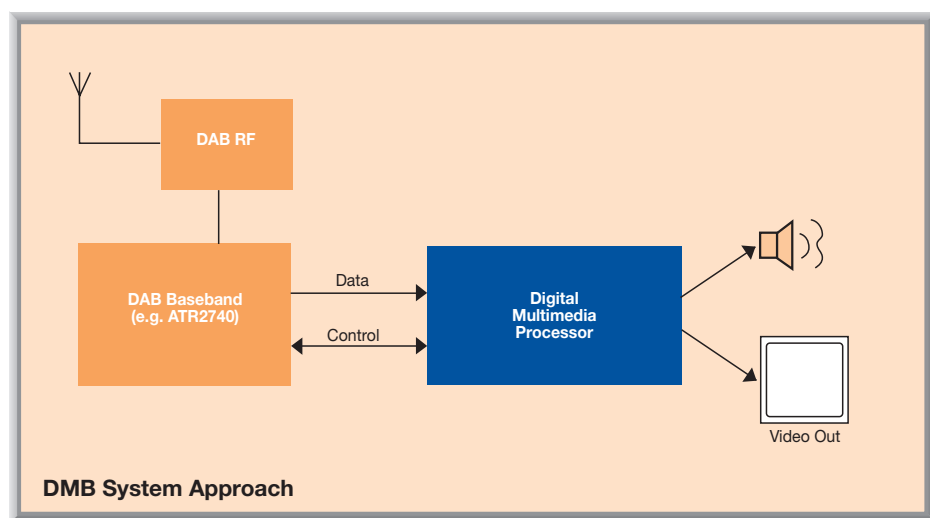

DAB Block Diagram

MULTIMEDIA SOLUTIONS

Since the number of available frequency bands is limited, the trend will be to use the same frequency band for multiple services. Another issue is that end users are steadily requiring even more features and functions in the area of multimedia broadcasting services such as DMB (Digital Multimedia Broadcasting) and DVB (Digital Video Broadcasting). These requirements will pave the way to new solutions that are able to meet this challenge.

DMB System Approach

FUTURE TRENDS

The co-existence of the well-known broadcast radio and new, upcoming standards will lead to all kinds of multi-standard solutions. Atmel is committed to design highly integrated multi-standard broadcast radio solutions (front end as well as baseband) that feature high performance and wide flexibility to support cost-optimized designs. The first activities will include DRM (Digital Radio Mondiale) and HD Radio (Ibiquity) as well as DMB (Digital Multimedia Broadcasting).

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